

NEW ADDITIONS TO THE ODONATE (DRAGONFLY)
FAUNA OF INDIA.

BY

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(With a text figure).

Subfamily—LIBELLULINAE.

1. RHYOTHEMIS OBSOLESCENS Kirby.

This species previously only reported from Borneo, Sumatra and Singapore has now been taken in Burma, by Mr. J. Elton Bott, at King Island, Mergui. All specimens agree closely to type.

2. ORTHETRUM TRIANGULARE MELANIA Selys.

Mr. H. V. O. Donel has sent me a pair of this race of *O. triangulare*, from Hasimara, Duars, 17. VI. 23. The species is a Chino-Japanese one and has been taken fairly recently in numbers by Professor Gregory in Yunnan. The new locality now given is probably its furthest extension southwards, it gradually replacing *O. triangulare triangulare* to the North-east. The basal spot in hindwing is smaller than in the specimens from Yunnan that I have seen. I note that it differs from *triangulare triangulare* by having only a single row of cells on either side of the midrib of loop.

3. NEUROTHEMIS TULLIA FERALIS Burm.

This species was mentioned in Part IV of Indian Dragonflies in this Journal, as doubtful from Burma. I have now received specimens from Dr. Laidlaw, labelled "Burma", but without date or locality.

4. NEUROTHEMIS DISPARILIS Kirb.

Specimens of this insect have been received from Nakachari, Sibsigar, Assam, collected, I think, by Mr. C. F. Beeson, 14. V. 21, this being its first record from within Indian limits.

5. NEUROTHEMIS INTERMEDIA ATALANTA ?

Dr. Laidlaw has sent me a pair of what is presumably a new race of *intermedia* but which is unknown to me. The specimens are labelled simply from "Burma" and bear a close resemblance to *disparilis*.

6. ONYCHOTHEMIS CULMINICOLA CULMINICOLA Forst.

A single male of this fine species has been received from Insein, Lower Burma, this being its first record from within Indian limits. Its distribution is Malacca, Sumatra and Borneo and it may easily be distinguished from *O. testacea ceylanica* by its ground colour, which is reddish brown with a metallic coppery reflection instead of dark green metallic.

7. TRAMEA VIRGINIA De Geer.

Two males of this Chinese and Indo-Chinese species have been sent to me by Mr. C. M. Inglis. They were taken at Kalaw, S. Shan States, Keng Tung, Upper Burma, 20. IX. 23. It is easily distinguished from *limbata* and *basilaris burmeisteri* by its larger size and by the great extent of the basal marking of hindwing.

8. SELYSIOTHEMIS NIGRA Van der Lind.

A common species up the Persian Gulf but not reported hitherto from within Indian limits. I have received a couple of specimens through the B. N. H. Society which were taken at Mirpur Sakro, Sind, 10. X. 22 and Mr. Bainbrigge Fletcher has taken a pair in Kashmir.

9. ANOTOGASTER GIGANTICA sp. nov.

Two males and one female received from Mr. C. M. Inglis, collected by Capt. Drummond, Kalaw, 20. IX. 23 and Siam Road, 8. IX. 23, S. Shan States, Burma.

Male—Abdomen 64 mm. Hindwing 49 mm.

Head. Eyes in contact for rather more than the antero-posterior diameter of occiput. Labium brownish yellow, labrum citron yellow broadly bordered with dark brown, black outwardly and a narrow vertical central stripe which almost cuts the yellow in two, anteclypeus black, postclypeus bright citron yellow very finely bordered with black, frons matt black, not nearly as broad as eyes, narrowing upwards, upper surface broadly and shallowly excavate, vesicle and occiput black, the latter on a level with frons and fringed with a dense bordering of coarse short black hairs.

Prothorax black with a narrow transverse line of yellow along posterior border.

Thorax black marked with very broad greenish yellow pyriform antehumeral stripes, broad and squared above, tapering to a point below.

Laterally a broad greenish yellow stripe just behind the humeral suture and the anterior three fourths of the metepimeron the same colour. Tergum marked with two large greenish yellow spots.

Legs black; trochanters of anterior two pairs yellow.

Wings hyaline, palely enfumed, reticulation close, costa very finely yellow; pterostigma dark brown, 4 to 4.5 mm., braced long and narrow; membrane white, nodal index:— $\frac{15-21}{15-15} | \frac{20-14}{15-16}$

Abdomen black marked with yellow as follows:—segment 2 with a broad oblique complete ring meeting the base at sides but narrowing and crossing middle of segment dorsally, a vestigial subdorsal apical spot and a similar lateral spot below it, segment 3 with a similar oblique stripe crossing dorsum just behind the jugal suture, 4 to 8 with narrow complete annules nearer base than apex and slightly notched behind on dorsum, on segment 8 the annule lies about middle of segment, segment 9 with a narrow basal subdorsal spot, 10 unmarked.

Anal appendages black, short. The superior tapering to a point, a little twisted on their longitudinal axis outwardly, bearing a robust basal spine beneath and another rather smaller beneath the junction of middle and basal thirds. Inferior two thirds the length of superiors, squared and slightly notched at apex which is very glossy and tumid.

Genitalia. Lamina broad and shallowly arched, its border everted and fringed with long sparse hairs, inner hamules broad foliate processes curling in on themselves and almost meeting like a pair of broad pincers, outer hamules long thin probe-like processes, lobe tumid at base, shortly truncate, its end viewed from below hollowed out, its edges everted somewhat like the extended tongue of a dog.

Female—Abdomen 80 mm. Hindwing 63 mm.

Markings almost exactly similar to those of the male. The labrum has the yellow completely divided by the medial fine black line and the postclypeus is broadly black along its lower border, this colour further invading the yellow at its middle. The 9th and 10th segments have been rather crushed so that it is difficult to make out whether marked or not. The abdominal markings are very obscure from decomposition but it is possible to make out that they are the same as in the male.

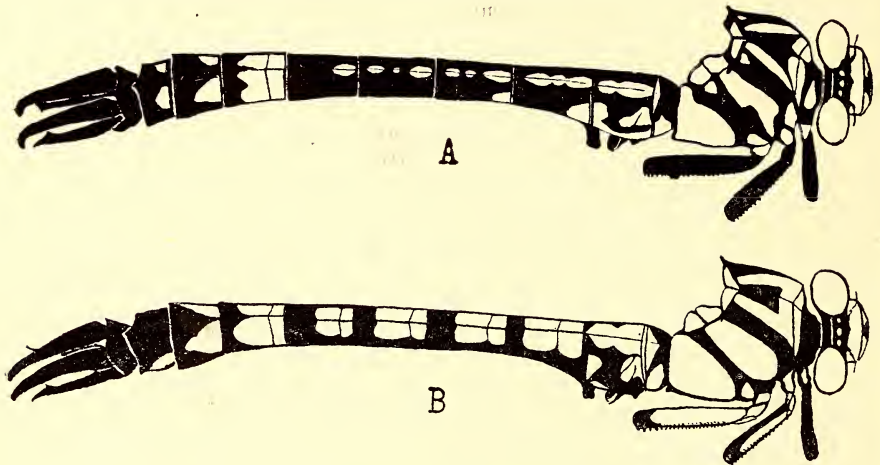
Ovipositor very long, black, 12 mm.

Wings similar to those of *A. nipalensis*, broadly and deeply saffronated at the base as far out as outer end of trigones. This marking in the hindwing not extending posterior to the hinder angle of trigone. Nodal index $\frac{17-24}{20-18} | \frac{24-18}{18-19}$, membrane blackish brown.

The species bears a very close resemblance to *A. nipalensis*, but is easily distinguished by its much larger size and by the broad yellow band across postclypeus. Types will be lodged in the British Museum.

10. MEGALOGOMPHUS SMITHII Selys.

Concerning this species Mr. Herbert Campion of the British Museum writes to me as follows:—"I have been comparing your type of *Heterogomphus hannyingtoni* with the type of *H. smithii*, Selys, which we also have in this Museum. Both of them are males, and they agree so closely in the structure of the anal appendages that I am wondering if they can be specifically distinct. They are very similar, too, in size and general appearance. The Selysian specimen is an old one and has obviously undergone considerable changes in coloration. As it stands, there are fewer dark markings than in your specimen, and the black pattern on the clypeus is not so heavy."



EXPLANATION OF FIGURE.

Dorso-lateral views of:—A *Megalogramphus hannyingtoni*. B. *Megalogramphus smithii*.

As it was important that the distinctness of these two species should be set at rest, I wrote to Mr. C. M. Inglis whom I knew to possess a specimen of *M. smithii*, in order that I could compare it with specimens of *M. hannyingtoni* in my own collection. I had examined the type of *M. smithii* in the British Museum when at home in 1920, and made a sketch of it so felt sure that the two species were distinct, albeit nothing is so satisfactory as confronting a species with another when a careful comparison is needed. Mr. Inglis very kindly sent me on the specimen of *M. smithii* and I have been able to work out the following differences:—

<i>M. smithii.</i>	<i>M. hannyingtoni.</i>
Abdomen with appendages 52 mm.	Abdomen with appendages 58 mm.
Hindwing 45 mm.	Hindwing 48 mm.
Pterostigma well braced, over 6 cells, shorter and broader than <i>hannyingtoni</i> .	Pterostigma poorly braced, over 5 to 5½ cells, long and narrow.
Reticulation close.	Reticulation more open, hence pterostigma although longer, is over fewer cells.
Anal triangle of hindwing with 4 cells.	Anal triangle of hindwing with only 2 cells.

Apices of superior anal appendages straight to the end.	Apices of superior anal appendages turned down rather abruptly.
Apices of branches of inferior appendages curling strongly outwards, spine on inner side rather long, robust.	Apices of branches of inferior appendages less strongly turned out. Spine on inner side shorter.
Lobe of genitalia moderately projecting, its inner border markedly infolded at its middle.	Lobe of genitalia more projected, its border barely infolded.
Labium dark brown.	Labium bright chrome yellow.
Postclypeus yellow with a transverse elongate black spot at its centre not reaching lower border.	Postclypeus black with a large apple green triangular spot on either side.
Antehumeral stripes broadly confluent with the mesothoracic collar. No humeral upper spot.	Antehumeral stripes barely or not confluent with the mesothoracic collar. An upper humeral spot present, also an upper spot on medial lateral black band.
No upper lateral spot on medial black band.	
Dorsal marking on segment 2 very broad.	Dorsal marking on segment 2 narrow.
Dorsal markings on segments 3 to 6 wide and covering nearly the basal three fourths.	Dorsal markings on segments 3 to 6 a mere chain of small spots, 3 on segments 3 to 5, only a small basal dorsal spot on 6.

It will be seen from the above that the total differences are very marked, and that there can be no doubt of the specific value of each insect. The specimen from Mr. Inglis which comes from Dilkush, Cachar, is largely decolorized from decomposition but the markings can be quite easily made out in a good light. The insects are contrasted in the accompanying text figure.

11. *MNAIS EARNSHAWI* Will.

In specimens received from Mr. C. M. Inglis, from Loimwe, S. Shan States, Burma, I note that the pterostigma is well formed in the females, its bordering nervures stout and its colour brown. In the two females described by Williamson, the pterostigma in one is dull white and in the other all but wanting, a mere speck of tissue on either side of a postnodal nervure. In specimens that I have received from Annam, the pterostigma in any individual is very variable. Thus in one specimen it is absent altogether in one wing, minute and triangular in another, comparatively well formed and quadrate in a third wing and in the fourth represented by a thickened postnodal nervure with a shading of brown on its outer side. Mr. Inglis' female may be a representative of a distinct race with stigma true in all wings.

The male accompanying it does not differ from type.

12. *RHINOCYPHA TRIMACULATA* Selys.

Dr. Laidlaw writing in the Indian Museum Records suggests that this species is almost certainly from Assam and not from Thibet. The receipt of a number of specimens from Cachar collected by Mr. Antrim and kindly sent on to me by Mr. C. M. Inglis supports this suggestion. The species closely resembles *R. ignipennis* in colouring but differs in its markings and smaller size.

13. *CACONEURA O'DONELI* sp. nov.

Closely resembles *C. autumnalis* Fras.

Male—Abdomen 23.5 mm. Hindwing 14 mm.

Head, thorax and abdomen deep black, the thorax dark green dull metallic on dorsum and marked laterally with an obscure posthumeral pale yellow stripe and a similar coloured stripe on lower border of metepimeron. Legs black.

Abdomen with paired dorsal whitish basal spots on segments 3 to 7.

Wings hyaline, pterostigma blackish brown, its nervures bordered within finely with white. Anal bridge (*ab*) entirely absent in all wings of all specimens examined. Postnodal nervures 12 to 13.

Anal appendages pale brown to black, subequal. Superior equal in length to 10th abdominal segment, cylindrical tapering to a point at apex, directed straight back, bearing a very robust spine on the ventral side about its middle. Inferior sloping strongly down, very broad at base tapering rapidly to a blunt truncated point.

Female very similar to male. Abd. 28 mm. Hindwing 19 mm.

Head. Cheeks and labrum dirty white, a narrow creamy white stripe crossing head from eye to eye at level of anterior ocellus.

Prothorax with a longitudinal irregular creamy subdorsal stripe on either side.

Thorax with similar markings to male but the markings clear creamy white and there is an additional vestigial antehumeral stripe on lower part of thorax.

Legs yellowish, femora black distally and speckled with black proximally, tibiae bright yellow on extensor surface, black on flexor.

Wings similar but pterostigma paler brown and only 11 to 12 postnodals in hindwing.

Abdomen similar to male but indications of pale lateral stripes on segments 2 to 6.

Habitat. Hasimara, Duars, Bengal, 8-10. IV. 23. Two males and a female received from Mr. H. V. O'Donel, after whom the insect is named.

From *C. autumnalis* and *C. nigra* it is at once distinguished by the total absence of the anal bridge (nervure *ab*), the postnodal nervures are fewer than in *nigra* and the size is smaller than both these species.

14. CACONEURA VERTICALIS ANNANDALEI (Fras).

Since I described *C. annandalei* three years ago, I have had the opportunity of examining a number of specimens of *Caconeura verticalis* Selys., and have been struck by the great similarity between the two.

C. annandalei is distributed throughout the whole length of the Western Ghats and also occurs in the low hills bordering the coast below Madras. No specimens have been taken in India to north of Bombay and none in Burma. *C. verticalis* is found from Borneo to Lower Burma but does not occur in India. Neither species have been reported so far from Ceylon. Thus a gap of some 1,000 miles of ocean separates the two species and we are faced with the problem as to how *annandalei* arrived in Continental India. As no specimens have been reported from Northern India we are left with the choice of two explanations, either the intervening forms in the North have died out and left a gap or this tiny insect has actually bridged a gap of a thousand miles of ocean! The latter explanation, hard as it is to believe, is apparently the correct one for Dr. N. Annandale has recently secured a specimen from the Andaman Isles which shares about equally the characters of *annandalei* and *verticalis*, it is in short, a missing link.

C. annandalei differs from *verticalis* by not having the transverse red stripe on the head and also by its postnodal nervures being 13 in number instead of 17. The male specimen from the Andamans has the red stripe absent as in *annandalei* but has 17 postnodal nervures as in *verticalis*.

The distance between the Andamans and Lower Burma, the nearest point to *verticalis* is roughly 350 miles, and the distance from these islands to Madras the nearest point for *annandalei* is rather under 800.

I do not think these forms can be regarded as other than subspecies under the names of *C. verticalis verticalis*, *C. verticalis annandalei* and *C. verticalis andamanensis*.

15. COELICCIA POUNGYI sp. nov.

Male—Abdomen 39 mm. Hindwing 24 mm.

Head velvety black marked with azure blue as follows:—the cheeks, a minute comma-shaped spot on the outer side of each posterior ocellus and a short linear streak well back of each eye.

Prothorax black, the sides pale blue.

Thorax pale blue, almost white, the alar sinus and middorsal carina finely mapped out in black, a broad stripe of black lying between the humeral and first lateral sutures and a fine line on the postero-lateral suture.

Wings hyaline, pterostigma black, over rather more than one cell, almost square but slightly broader than long; 3 cells between quadrilateral and level of subnode in all wings, costal side of quadrilateral in forewing one-fourth less than posterior side, *Miii* rises at the node, *Ms.* slightly distal, 18 postnodal nervures in forewing, 16 in hind.

Legs black, coxae pale blue, each with a well defined black spot on outer side.

Abdomen black, segments 9 and 10 bright chrome yellow, as also the anal appendages. Segment 1 with a large blue spot on each side, 2 with a linear stripe on the sides bifid basalward, 3 and 4 with minute blue basal paired spots on dorsum.

Superior anal appendages stouter than in *renifera* and with apex and inner edge curling inwards. A robust ventral spine situated nearer the base than in *renifera* and a still smaller one nearer the base. Inferior appendages directed straight back, much longer than superiors, apices curling in and meeting one another.

Habitat.—Gokteik, N. Shan States, Burma. A single male collected, 26. X. 21. Distinguished from all other species by the broad extent of blue on thorax, the whole of dorsum anterior to the humeral suture being immaculate save for the fine middorsal carina. From *flavicauda* it is distinguished by *Miii* being at the node instead of proximal.
